

QUIZ NAVIGATION



Rose Wang



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Started on	Tuesday, 15 October 2024, 4:24 AM
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Completed on	Tuesday, 15 October 2024, 4:32 AM
Time taken	7 mins 51 secs
Marks	10.0/12.0
Grade	83.3 out of 100.0

Question 1

ID: 54321

Incorrect

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THE NEXT 3 QUESTIONS INCLUSIVE REFER TO THE FOLLOWING CASE:

NA is a 20-year-old non-pregnant female, complaining of general fatigue, brittle hair and nails and shortness of breath during moderate physical activity. This is unusual for NA, who has been active in recreational sports her whole life. She maintains a vegetarian diet high in carbohydrates as she enjoys making homemade pasta for herself and her roommates. Her menstrual cycle is described as normal to heavy depending on the month. She has been taking a combined oral contraceptive pill for the last year. She is on no other medications. After an investigation by bloodwork at a family health team clinic, she is diagnosed with iron-deficiency anemia.

What is the target daily dose of dietary elemental iron NA should have had to prevent anemia?

Select one:

- ☐ 15mg ✓
- ☒ 30 mg ✗
- ☐ 10mg ✗
- ☐ 45mg ✗

Rose Wang (ID:113212) this answer is incorrect. Non-pregnant women are recommended to have a daily dietary elemental iron intake of 15 mg.

Incorrect

Marks for this submission: 0.0/1.0.

TOPIC: Anemia

LEARNING OBJECTIVE:

To recommend the optimal iron supplementation treatment.

BACKGROUND:

It is important to note the differences in iron supplementation between the prevention and treatment of iron deficiency anemia (IDA). In order to prevent IDA, men and women are advised to have 10 mg of iron a day. Menstruating women are advised to have 15 mg per day and pregnant women are advised to have 30 mg per day. To treat iron deficiency, new research advises patients to have 1 iron tablet a day. This is aimed at reducing iron overload and improving tolerability.

RATIONALE:**Correct Answer:**

- **15 mg** - This is the amount of daily dietary elemental iron intake recommended for non-pregnant women.

Incorrect Answers:

- **30 mg** - Non-pregnant women are recommended to have a daily dietary elemental iron intake of 15 mg.
- **10 mg** - Non-pregnant women are recommended to have a daily dietary elemental iron intake of 15 mg.
- **45 mg** - Non-pregnant women are recommended to have a daily dietary elemental iron intake of 15 mg.

TAKEAWAY/KEY POINTS:

Menstruating females are advised to have 15 mg of elemental iron from their diet daily.

REFERENCE:

[1] Auerbach M, DeLoughery TG. Treatment of iron deficiency anemia in adults. UpToDate. Updated August 2023.

The correct answer is: 15mg

Question 2

ID: 54323

Correct

Based on the recommended dose of oral iron that you previously identified, NA's physician asks for your advice on iron therapy dosing.

Correct

Flag question

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Which of the following options would be best for NA?

Select one:

☒ Ferrous sulfate 300 mg PO once daily ✓

Rose Wang (ID:113212) this answer is correct. Ferrous sulfate 300 mg PO once daily is the correct dose.

☐ Ferrous fumarate 300 mg PO BID ✗

☐ Ferrous gluconate 300 mg PO BID ✗

☐ Feramax® (polysaccharide-iron complex) 75 mg PO once daily ✗

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Anemia

LEARNING OBJECTIVE:

To recommend optimal therapy for a patient based on specific factors.

BACKGROUND:

Each iron salt has a different strength of elemental iron. Below is a list that illustrates this.

IRON FORM	ELEMENTAL IRON
150 mg Feramax® (Polysaccharide-Iron Complex)	150 mg
300 mg ferrous fumarate	100 mg
300 mg ferrous sulfate	60 mg
300 mg ferrous gluconate	35 mg
11 mg Proferrin® (Heme Iron Polypeptide)	11 mg

Lower doses of iron are now advised to prevent iron overload and improve tolerance.

RATIONALE:

Correct Answer:

- **Ferrous sulfate 300 mg PO once daily** - Ferrous sulfate 300 mg PO once daily is the correct dose.

Incorrect Answers:

- **Ferrous fumarate 300 mg PO BID** - Ferrous fumarate 300 mg PO BID is too high of a dose.
- **Ferrous gluconate 300 mg PO BID** - Ferrous gluconate 300 mg PO BID is too high of a dose.
- **Feramax® (polysaccharide-iron complex) 75 mg PO once daily** - Feramax® (polysaccharide-iron complex) is less efficacious than iron salts.

TAKEAWAY/KEY POINTS:

Lower doses of iron are now advised to prevent iron overload and improve tolerance.

REFERENCE:

[1] Auerbach M, DeLoughery TG. Treatment of iron deficiency anemia in adults. UpToDate. Updated August 2023.

The correct answer is: Ferrous sulfate 300 mg PO once daily

Question 3

ID: 54324

Correct

Flag question

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Given the recommendation that you provided previously to her physician, which of the following is the **LEAST** appropriate counselling point regarding iron therapy for NA?

Select one:

☒ Do not consume iron from food sources ✓

Rose Wang (ID:113212) this answer is correct. There is no interaction or risk of toxicity from dietary iron with iron supplementation.

☐ Take iron tablets with a glass of orange juice ✗

☐ Side effects of iron therapy include nausea, dyspepsia, and constipation ✗

☐ Separate administration of iron from food and other medications by 2 hours ✗

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Anemia

LEARNING OBJECTIVE:

To understand important counselling points for iron supplementation.

BACKGROUND:

In order to treat iron deficiency, iron can be provided to the body through diet or medications. In order to increase the absorption of non-heme iron in the body, it is best to take iron supplements with sources of vitamin C (e.g. orange juice). Iron absorption enhancers include muscle tissue in meat and vitamin C where concurrent administration of more than 200 mg of vitamin C per 30 mg iron increases absorption of iron from the gastrointestinal tract. Side effects of iron therapy may include nausea, dyspepsia, and constipation. It is important to note that there are many different forms of iron supplements with different strengths of elemental iron and a health care provider should be consulted before switching between different iron products.

Food and certain medications may decrease absorption if taken with iron supplements and administration should be separated by 2 hours.

Some of these medications include but are not limited to:

- Antacids
- Calcium carbonate
- Cholestyramine
- Levodopa
- Methyl dopa
- Penicillamines
- Quinolones
- Sodium bicarbonate
- Tetracyclines

RATIONALE:**Correct Answer:**

- **Do not consume iron from food sources** - There is no interaction or risk of toxicity from dietary iron with iron supplementation.

Incorrect Answers:

- **Take iron tablets with a glass of orange juice** - There is moderate evidence that ascorbic acid may increase the absorption of non-heme iron.
- **Side effects of iron therapy include nausea, dyspepsia, and constipation** - Nausea, dyspepsia, and constipation are possible side effects of iron therapy.
- **Separate administration of iron from food and other medications by 2 hours** - Certain foods and medications may decrease iron absorption.

TAKEAWAY/KEY POINTS:

Iron can be supplemented to the body through both diet and medications. There is no contraindication between dietary and supplement sources of iron.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. Available from: <http://www.myrxtx.ca>.

The correct answer is: Do not consume iron from food sources

Question 4

ID: 54346

Correct

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During your clinical rotation, a resident physician approaches you in the hallway to ask your opinion. The resident has a pregnant 36-year-old female patient presenting with ecchymosis, decreased appetite and a swollen red tongue. The resident suspects folate-deficiency anemia and is worried about potential neural tube defects in the fetus. After ruling out vitamin B12 deficiency, you and the resident decide on an appropriate dose of 4 mg of folic acid supplementation for the patient.

How long should the patient maintain treatment with folic acid supplementation?

Select one:

- ☐ 1 month ✗
- ☒ 4 months ✓
- ☐ Duration of pregnancy ✗
- ☐ Lifelong ✗

Rose Wang (ID:113212) this answer is correct. Duration of therapy for folate deficiency is typically 4 months.

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Folate-deficiency anemia

LEARNING OBJECTIVE:

To understand the duration of treatment for folate-deficiency anemia.

BACKGROUND:

Folate-deficiency anemia is a type of macrocytic or megaloblastic anemia. Common causes include inadequate intake (e.g., alcoholics, chronically ill and elderly), poor absorption (i.e., malabsorption syndromes), increased requirements (e.g., pregnancy, hemolytic anemia, malignancy, chronic inflammatory disorders, such as rheumatoid arthritis), and medications (e.g., folate antagonists such as methotrexate and phenytoin which reduces the absorption of folate). Patients generally present with decreased appetite (weight loss, swollen red tongue, angular stomatitis, ecchymosis (bruising), neural tube defects (pregnancy). Drug therapy includes 1-5 mg of folic acid supplementation daily and duration is typically 4 months (but in some cases may be lifelong). This is in contrast to vitamin B12 deficiency in which supplementation is generally life long. Of note, vitamin B12 deficiency should always be ruled out before starting folic acid since supplementation can mask B12 deficiencies which allows the underlying neuropathy to persist.

RATIONALE:

Correct Answer:

- **4 months** - Duration of therapy for folate deficiency is typically 4 months.

Incorrect Answers:

- **1 month** - Duration of therapy for folate deficiency is typically 4 months.
- **Duration of pregnancy** - Duration of therapy for folate deficiency is typically 4 months.
- **Lifelong** - Duration of therapy for folate deficiency is typically 4 months.

TAKEAWAY/KEY POINTS:

Duration of therapy for folate deficiency is typically 4 months whereas for vitamin B12 it is usually lifelong.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.tx.ca>.

The correct answer is: 4 months

Question 5

ID: 54347

Correct

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LV is a 58-year-old male who was diagnosed with folate deficiency during his recent blood work. He also suffers from type 2 diabetes mellitus and hypertension, for which he is managed on his current medications metformin 1000 mg BID, empagliflozin 10 mg daily, amlodipine 10 mg daily and rosuvastatin 5 mg daily at bedtime. Two months ago, his hemoglobin A1C was 6.9%. LV admits to drinking 10-12 beers most nights of the week but does not smoke cigarettes and enjoys carbohydrate-rich foods.

All of the following about folate and folate deficiency for LV are true, **EXCEPT**:

Select one:

- ☐ LV's alcoholism may have contributed to his folate deficiency ✗
- ☒ LV's bloodwork would exhibit microcytic anemia ✓
- ☐ LV would benefit from eating more leafy green vegetables, liver, and legumes ✗
- ☐ LV is deficient in vitamin B9 ✗

Rose Wang (ID:113212) this answer is correct. Folate deficiency results in macrocytic anemia

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Anemia

LEARNING OBJECTIVE:

To understand the characteristics of folate and folate deficiency.

BACKGROUND:

Folate is an essential nutrient of the B complex group of vitamins, specifically the naturally occurring version of vitamin B9. Folic acid is the synthesized folate molecule. Folate is used as a cofactor and is involved in various intracellular functions, especially to help produce DNA and RNA. Humans are not able to synthesize this vitamin naturally which makes folate an essential vitamin. Folate is found in whole-grain bread, green vegetables, liver, lentils, beans, orange juice, and yeast. Folate is available naturally in food, and folic acid is the synthetic form of folate. Folate can be easily destroyed by high heat and light. Since folate is essential for brain development and function, it is important that women who are planning to become pregnant or are pregnant to have an adequate supply of folate in order to avoid neural tube defects associated with their

pregnant to have an adequate supply of folate in order to avoid neural tube defects associated with their child. Those that are folate deficient can develop macrocytic anemia which can cause fatigue, weakness, and dyspnea. Folate deficiency may be treated with folic acid supplementation, however, when anemia is suspected, levels of iron, vitamin B12, and folate should be tested in order to determine the exact cause of anemia. Folic acid supplementation can help to treat folate deficiency, however, it may also mask the effects of vitamin B12 deficiency. For appropriate diagnosis and optimal treatment, further tests such as determining levels of vitamin B12, folate, and iron should be done after a complete blood count.

RATIONALE:

Correct Answer:

- **LV's bloodwork would exhibit microcytic anemia** - Folate deficiency results in macrocytic anemia

Incorrect Answers:

- **LV's alcoholism may have contributed to his folate deficiency** - Folate deficiency may be a consequence of alcoholism.
- **LV would benefit from eating more leafy green vegetables, liver, and legumes** - Folate is naturally found in some foods such as green vegetables, liver and beans.
- **LV is deficient in vitamin B9** - Vitamin B9 is folic acid. Folic acid is the synthesized version of folate.

TAKEAWAY/KEY POINTS:

Folate deficiency exhibits macrocytic anemia.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.tx.ca>.

[2] Folate | Linus Pauling Institute | Oregon State University. <http://lpi.oregonstate.edu/mic/vitamins/folate>.

The correct answer is: LV's bloodwork would exhibit microcytic anemia

Question 6

ID: 54350

Correct

Flag question

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ZM is a 69-year-old male who was recently diagnosed with iron-deficiency anemia. His medications include telmisartan 80 mg daily, atorvastatin 20 mg in the evening, fluoxetine 20 mg daily, senna 8.6 mg daily at bedtime and tamsulosin CR 0.4 mg daily. He is allergic to penicillin (reaction: full body rash). ZM reports eating a healthy diet high in seafood and leafy greens. He approaches the pharmacy counter today to inquire about an oral iron supplement. He notices that FeraMAX® (polysaccharide iron complex) displays the highest level of elemental iron (150 mg) and would like to know if this supplement is, in fact, his best option.

What do you inform ZM about regarding the polysaccharide iron complex?

Select one:

- ☐ Polysaccharide iron complex is more efficacious than ferrous salts ✗
- ☐ Polysaccharide iron complex does not produce gastrointestinal side effects ✗
- ☒ Polysaccharide iron complex is better tolerated than ferrous salts ✓
- ☐ Polysaccharide iron complex is an affordable option for oral iron supplementation ✗

Rose Wang (ID:113212) this answer is correct. Polysaccharide iron complex is better tolerated than ferrous salts.

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Anemia

LEARNING OBJECTIVE:

To understand polysaccharide iron complex as an option for oral iron supplementation.

BACKGROUND:

Oral supplementation for iron is usually first-line for iron repletion. Adverse events associated with oral iron are usually gastrointestinal-related. Newer oral iron preparations aim to optimize efficacy and reduce adverse effects. These include heme iron polypeptide and polysaccharide-iron complex preparations.

Therefore, polysaccharide iron complex (FeraMAX 150) may be better tolerated, but due to inconsistent reports, the data is more theoretical. The drug, which consists of 150 mg of elemental iron surrounded by a polydextrose complex, is inactive at a higher pH (e.g. prior to ingestion) and releases the active and soluble form of iron at a low pH (e.g. after ingestion into the stomach). This structure allows for the drug's reduced toxicity profile. However, despite having a larger amount of elemental iron than ferrous salts, it does not yield greater clinical efficacy for iron-deficiency anemia. It follows a once daily dosing schedule, as with other oral iron salts and can be taken with or without food. A disadvantage to the use of FeraMAX 150 is its higher cost.

RATIONALE:

Correct Answer:

- **Polysaccharide iron complex is better tolerated than ferrous salts** - Polysaccharide iron complex is better tolerated than ferrous salts.

Incorrect Answers:

- **Polysaccharide iron complex is more efficacious than ferrous salts** - Polysaccharide iron complex is less efficacious than ferrous salts.
- **Polysaccharide iron complex does not produce gastrointestinal side effects** - Polysaccharide iron complex may produce gastrointestinal side effects.
- **Polysaccharide iron complex is an affordable option for oral iron supplementation** - Polysaccharide iron complex is an expensive option for oral iron supplementation.

TAKEAWAY/KEY POINTS:

Polysaccharide iron complex is not necessarily more efficacious than other forms of oral iron despite having a larger amount of elemental iron, but it is better tolerated by the gut.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.tx.ca>.

The correct answer is: Polysaccharide iron complex is better tolerated than ferrous salts

Question 7

ID: 54351

Incorrect

Flag question

Send Feedback

AM is a 24-year-old non-pregnant female who has been complaining of general fatigue, tingling in her fingers and toes and difficulty remembering work tasks. Her doctor decides to run blood work and finds that AM is deficient in vitamin B12. Upon a recommendation from her pharmacist, AM selects an appropriate supplement over the counter.

Upon adequate supplementation, approximately what time frame is given for resolution of neurological deficits from megaloblastic anemia?

Select one:

- ☐ 6 months ✓
- ☒ 3 months ✗
- ☐ 1 month ✗
- ☐ 1 week ✗

Rose Wang (ID:113212) this answer is incorrect. Resolution of neurological symptoms typically takes around 6 months.

Incorrect

Marks for this submission: 0.0/1.0.

TOPIC: Megaloblastic anemia

LEARNING OBJECTIVE:

To review monitoring parameters, endpoints and timelines outlined in the patient's care plan.

BACKGROUND:

Severe vitamin B12 deficiency may cause neurologic complications such as dementia, weakness, sensory neuropathy, and paresthesias. It is important to test for both folate and vitamin B12 when megaloblastic anemia is suspected as folic acid supplementation may alleviate and mask the effects of vitamin B12 deficiency. However, folic acid supplementation does not treat the neurologic complications associated with vitamin B12 deficiency. Upon treatment, full resolution of anemia will usually occur within 2 months. The reticulocyte count of the body responds to treatment within 3-4 days of beginning, while hemoglobin levels improve around day 10. Neurologic complications may take approximately 6 months or longer to resolve, while some severe complications may persist even longer.

RATIONALE:

Correct Answer:

- **6 months** - Resolution of neurological symptoms typically takes around 6 months.

Incorrect Answers:

- **3 months** - Resolution of neurological symptoms typically takes around 6 months.
- **1 month** - Resolution of neurological symptoms typically takes around 6 months.
- **1 week** - Resolution of neurological symptoms takes around 6 months.

TAKEAWAY/KEY POINTS:

Following folic acid or vitamin B12 supplementation, it may take 6 months for full resolution of neurological symptoms.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.ca>.

The correct answer is: 6 months

Question 8

ID: 54353

Correct

Flag question

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GM has been diagnosed with anemia from his family physician. All of the following are goals of therapy in anemia, **EXCEPT**:

Select one:

☒ Provide iron therapy to patients ✓

Rose Wang (ID:113212) this answer is correct. Not all anemias are caused by iron deficiency.

☐ Improve quality of life ✗

☐ Prolong survival ✗

☐ Determine and treat the underlying cause of anemia ✗

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Anemia

LEARNING OBJECTIVE:

To determine the patient's health goals and optimal therapeutic outcomes, specifying measurable endpoints, target values and timeframes.

BACKGROUND:

After a diagnosis of anemia, the goals of therapy are to include:

- Determine and treat the underlying cause of anemia
- Treat symptoms and signs of anemia
- Improve the quality of life
- Prolong survival

It is important to determine the cause of anemia as there are many different causes of anemia and the treatment options may vary dependent on the underlying cause and patient-specific factors.

RATIONALE:

Correct Answer:

- **Provide iron therapy to patients** - Not all anemias are caused by iron deficiency.

Incorrect Answers:

- **Improve quality of life** - Anemia is associated with a poor quality of life.
- **Prolong survival** - Anemia is associated with a risk of fatality.
- **Determine and treat the underlying cause of anemia** - It is important to identify any underlying disease conditions that may be causing anemia and treat that condition to possibly resolve the anemia.

TAKEAWAY/KEY POINTS:

Iron therapy would only be appropriate if a patient were found to be diagnosed with iron-deficiency anemia. There are many different causes of anemia, therefore iron therapy is not always an option.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.ca>.

The correct answer is: Provide iron therapy to patients

Question 9

ID: 54358

Correct

Flag question

Send Feedback

ST is a 44-year-old female who has been diagnosed with normocytic anemia. She is currently suffering from stage II gastric cancer, diagnosed 6 months ago. She has no other major health conditions aside from mild asthma which is well controlled with her short-acting beta agonist inhaler. Her oncologist explains that because she is losing blood from her gut as a result of the tumour, she has developed anemia without iron-deficiency as a consequence. Her ferritin levels are 447 (22-561 pmol/L), vitamin B12 is 240 (118-701 pmol/L) and folate levels are 11 (6-38 nmol/L) She is currently receiving treatment for the cancer under the care of her oncology team.

Which of the following agents should ST be treated at this time to manage her anemia?

Select one:

- ☐ Ferrous sulfate 200 mg PO once daily ✗
- ☐ Iron sucrose 300 mg IV one dose only ✗
- ☐ Folic acid 4 mg PO once daily ✗
- ☒ Darbepoetin alfa 2.25 mcg/kg subcutaneously weekly ✓

Rose Wang (ID:113212) this answer is correct. After treating the underlying cause, if not deficient in iron, folate or B12, treat with erythropoiesis-stimulating agent.

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Normocytic anemia

LEARNING OBJECTIVE:

To identify treatment options for anemia of chronic disease.

BACKGROUND:

Normocytic anemia, also known as anemia of inflammation, may co-exist with other anemias. It is commonly seen in hospitalized patients and associated with several disease states, including HIV, autoimmune conditions, cancer, heart failure, chronic inflammation, and renal disease. There is no definitive test available; however, common presentations include high C-reactive protein, normal or high ferritin levels, low total iron binding capacity (TIBC), and erythropoiesis (EPO) deficiency. First-line treatment is treating the underlying cause. If the patient is iron deficient, iron supplementation is recommended. If the patient is not deficient in iron, folate, or vitamin B12, treat with an erythropoiesis-stimulating agent (ESA). Erythropoietin, which is normally produced by the kidney, stimulates bone marrow to make more red blood cells. ESAs are used in conditions such as chemotherapy-associated anemia, chronic kidney disease, and HIV, in which there is impairment of red blood cell production. ESAs are recombinant versions of erythropoietin produced pharmacologically. They result in an increase in total body hemoglobin and hematocrit. Examples of ESAs include epoetin alfa and darbepoetin alfa. The most severe adverse effects of ESAs are related to a significant risk of thrombotic events. There is an associated increased risk of ischemic stroke and myocardial infarction.

RATIONALE:

Correct Answer:

- **Darbepoetin alfa 2.25 mcg/kg subcutaneously weekly** - After treating the underlying cause, if not deficient in iron, folate, or B12, treat with erythropoiesis-stimulating agent.

Incorrect Answers:

- **Ferrous sulfate 200 mg PO once daily** - ST is not iron deficient.
- **Iron sucrose 300 mg IV one dose only** - ST is not iron deficient.
- **Folic acid 4 mg PO once daily** - ST is not deficient in folic acid.

TAKEAWAY/KEY POINTS:

After treating the underlying cause, if not deficient in iron, folate, or B12, treat with an erythropoiesis-stimulating agent.

REFERENCE:

- [1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.tx.ca>.
 - [2] Schoener, B., & Borger, J. (2023). Erythropoietin Stimulating Agents. In *StatPearls*. StatPearls Publishing.
- The correct answer is: Darbepoetin alfa 2.25 mcg/kg subcutaneously weekly

Question 10

ID: 55323

Correct

Flag question

Send Feedback

LL is an 18-year-old female who suffers from heavy menstrual bleeding and celiac disease. She is an active teenager, playing competitive soccer three times a week and is thinking about joining her school's swim team as well. She sleeps an average of 7 hours a night and maintains a well-balanced diet that her parents cook for her. Her mother has noticed that LL has been experiencing persistent fatigue over the last year. During her most recent appointment, her physician noted that her iron levels were substantially low. Despite 5 months of oral iron therapy, her symptoms have not improved. Therefore, her physician refers her to a hematologist to receive intravenous iron therapy.

All of the following statements about intravenous iron are true, **EXCEPT**:

Select one:

- ☐ LL would be considered a candidate for intravenous iron ✗
- ☐ LL is at risk of possible infusion-related reactions from intravenous iron including hypotension and anaphylaxis. ✗
- ☐ Depending on her hemoglobin levels, LL may only require a single dose of intravenous iron ✗
- ☒ After receiving intravenous iron, LL's hemoglobin levels will improve within about 3 months ✓

Rose Wang (ID:113212) this answer is correct. Following intravenous iron, hemoglobin levels take about 1-2 weeks to improve.

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Intravenous iron

LEARNING OBJECTIVE:

To identify the characteristics of intravenous iron therapy.

BACKGROUND:

Patients who fail to show a response to oral iron therapy may be candidates to receive intravenous (IV). Other patients suitable for parenteral iron therapy include those with chronic kidney disease, gastric resections, chronic blood loss, malabsorption syndromes (e.g. celiac disease) or those who need rapid increases in iron levels. In celiac disease, the body attacks the small lining of the intestine when a patient consumes gluten. This can impair iron absorption in the gut. IV iron is often a preferable option for these patients, using the Z track method.

Iron repletion can often occur in 1-2 doses using IV iron. However, low doses are still recommended to reduce iron overload and improve tolerability. Hemoglobin begins to increase after about 1-2 weeks of receiving IV iron.

Although rare, typical adverse events for IV iron include anaphylaxis and hypotension. These adverse events are less frequent with iron sucrose as compared to iron dextran. Iron dextran can also cause tissue staining.

RATIONALE:

Correct Answer:

- **After receiving intravenous iron, LL's hemoglobin levels will improve within about 3 months** - Following intravenous iron, hemoglobin levels take about 1-2 weeks to improve.

Incorrect Answers:

- **LL would be considered a candidate for intravenous iron** - Since LL has been unresponsive to oral iron therapy and suffers from malabsorption syndrome, she would be considered a candidate for intravenous iron.
- **LL is at risk of possible infusion-related reactions from intravenous iron including hypotension and anaphylaxis.** - Intravenous iron carries a risk of infusion-related reactions including hypotension and anaphylaxis.
- **Depending on her hemoglobin levels, LL may only require a single dose of intravenous iron** - Iron repletion via intravenous route usually occurs in 1 (sometimes 2) doses.

TAKEAWAY/KEY POINTS:

Following intravenous iron, hemoglobin levels take about 1-2 weeks.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.tx.ca/>.

The correct answer is: After receiving intravenous iron, LL's hemoglobin levels will improve within about 3 months

Question 11

ID: 54341

Correct

Flag question

Send Feedback

MB is a 33-year-old female recently diagnosed with iron-deficiency anemia from her family doctor. MB currently has a copper intrauterine device inserted for contraception and uses a multivitamin daily for general health. She is allergic to cats for which she takes no medications. She follows a vegan diet which her doctor explained may have contributed to her diagnosis. As per her doctor's recommendation, MB picks up ferrous fumarate 300 mg from her local pharmacy.

All of the following statements about MB's treatment regimen for iron-deficiency anemia are true, **EXCEPT**:

Select one:

- ☒ Treatment should continue for a month after hemoglobin normalizes ✓
- ☐ The primary adverse effect that she will experience is gastrointestinal upset ✗
- ☐ Ferrous fumarate is more efficacious than polysaccharide iron complexes ✗
- ☐ Parenteral iron is not recommended at this time ✗

Rose Wang (ID:113212) this answer is correct. Treatment should continue for 3-6 months after hemoglobin normalizes.

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Anemia

LEARNING OBJECTIVE:

Identify first-line treatment options for iron-deficiency anemia.

BACKGROUND:

Oral supplementation is usually first-line treatment for iron-deficiency anemia. Treatment of anemia should continue for 3-6 months once hemoglobin normalizes, but is sometimes lifelong. Adverse effects of oral iron include primarily gastrointestinal upset, including constipation. Patients should be instructed to take their supplements with food if the effects are intolerable, however it should be noted that absorption is greatest on an empty stomach. Liquid formulations can cause tooth staining. Polysaccharide iron complex (Feramax) may be better tolerated but is less efficacious than ferrous salts. It is also more expensive. If tolerability is an issue, intermittent dosing is also an option. Intermittent dosing (either weekly or alternate day dosing) may trigger fewer gastrointestinal side effects compared to daily dosing and is therefore recommended in some cases to increase overall compliance to iron supplementation.

Heme iron polypeptide (Proferin) is readily absorbed, may be better tolerated than iron salts at a lower dose, but lacks evidence for use in anemia. It is from an animal source (bovine), so caution is advised in patients with dietary restrictions. It is also more expensive.

Due to risk of anaphylaxis and other systemic reactions such as hypotension, parenteral iron is generally reserved for patients who are unresponsive to oral therapy, have chronic kidney disease, have had gastric resection or chronic blood loss, have malabsorption syndromes (e.g. celiac disease), need a rapid increase in iron levels, etc.

RATIONALE:

Correct Answer:

- **Treatment should continue for a month after hemoglobin normalizes** - Treatment should continue for 3-6 months after hemoglobin normalizes.

Incorrect Answers:

- **The primary adverse effect that she will experience is gastrointestinal upset** - The primary adverse effect that she will experience is gastrointestinal upset.
- **Ferrous fumarate is more efficacious than polysaccharide iron complexes** - Ferrous salts are more efficacious than polysaccharide iron complexes.
- **Parenteral iron is not recommended at this time** - Parenteral iron is generally reserved for patients who are unresponsive to oral therapy.

TAKEAWAY/KEY POINTS:

Treatment with oral iron should continue for 3-6 months after hemoglobin normalizes.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.ca>.

The correct answer is: Treatment should continue for a month after hemoglobin normalizes

Question 12

ID: 54342

Correct

Flag question

Send Feedback

AJ (they/them) approaches the pharmacy counter during your shift. They are picking up a bottle of ferrous gluconate and they inform you that this is the first time that they are trying oral iron. AJ currently receives weekly injections of testosterone and takes rabeprazole 20 mg once daily in the morning for heartburn. AJ asks if there is anything specific they should know before beginning to take ferrous gluconate.

Which of the following is an appropriate counselling point for AJ?

Select one:

- ☐ It is best to take the ferrous gluconate with breakfast ✗
- ☐ Taking the ferrous gluconate with coffee will increase absorption ✗
- ☒ It is best to separate the timing of ferrous gluconate and rabeprazole ✓
- ☐ Ferrous gluconate should be taken with a glass of orange juice ✗

Rose Wang (ID:113212) this answer is correct. Administration of ferrous gluconate should be spaced out from rabeprazole.

Correct

Marks for this submission: 1.0/1.0.

TOPIC: Interactions and absorption

LEARNING OBJECTIVE:

To recognize drug interactions that influence absorption of iron salts.

BACKGROUND:

Vitamin C may enhance the absorption of iron salts, but there is no strong quality evidence. Calcium supplements, antacids, tea, coffee and red wine decrease absorption. Iron salts should be taken on an empty stomach for optimal absorption (i.e. 1 hour before or 2 hours after a meal). Medications and other supplements that interact with iron include cholestyramine, levodopa, sodium bicarbonate, fluoroquinolones, tetracyclines and proton pump inhibitors. Space out the administration of iron salts with the above medications (time varies based on the agent). Lastly, iron absorption may be improved if the oral supplement

is given every other day (high amount of iron increases hepcidin levels and decreases iron absorption).

RATIONALE:

Correct Answer:

- **It is best to separate the timing of ferrous gluconate and rabeprazole** - Administration of ferrous gluconate should be spaced out from rabeprazole.

Incorrect Answers:

- **It is best to take the ferrous gluconate with breakfast** - Iron salts should be taken on an empty stomach for optimal absorption.
- **Taking the ferrous gluconate with coffee will increase absorption** - Coffee will decrease absorption of ferrous gluconate.
- **Ferrous gluconate should be taken with a glass of orange juice** - While vitamin C may enhance the absorption of iron salts, there is no strong quality evidence.

TAKEAWAY/KEY POINTS:

Space out the administration of iron salts with cholestyramine, levodopa, sodium bicarbonate, fluoroquinolones, tetracyclines and proton pump inhibitors.

REFERENCE:

[1] Lim W. Common Anemias. In: Therapeutic Choices. Ottawa (ON): Canadian Pharmacists Association. <http://www.myrx.ca>.

The correct answer is: It is best to separate the timing of ferrous gluconate and rabeprazole

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